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Kimberly A. Chasteen  
PO Box 1243  
Yorktown, VA 23692

EXAMINER

HALL, ASHA J

ART UNIT	PAPER NUMBER
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1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/714,230

Applicant(s)

SUN, SAM-SHAJING

Examiner

Asha Hall

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9-13 are rejected under 35 U.S.C. 103(a) as unpatentable over Thompson (US 6,107,561) in view of Maekawa et al. US (5,565,607).

With regard to claim 9, Thompson et al. discloses the method for forming an organic photovoltaic device, comprising of synthesizing photovoltaic block copolymer samples (col. 1; lines: 9-11 & 51-57), but fails to disclose the specific steps of forming the device such as:

(a) dissolving the photovoltaic block copolymer samples in a solvent, (b) filtering the copolymer-solvent mixture, (c) forming a film of the copolymer-solvent mixture on a pretreated glass slide/prepared surface, and (d) removing the solvent/dried overnight.

Maekawa et al. discloses the method of processing block copolymers (col. 4; lines: 4-8) and further discloses:

(a) dissolving the block copolymer samples in a solvent ( col. 5; lines: 5-16);  
(b) filtering the copolymer-solvent mixture (col. 7; lines: 13-15);  
(c) forming a film of the copolymer-solvent mixture on a pretreated glass slide/prepared surface (col. 6; lines: 41-45);

(d) removing the solvent/distilled off (col. 7; lines: 1-3 & 15-17).

Maekawa et al. further teaches that for the purpose of improving the physical properties of the polymer utilizing the characteristics of the monomer of the present invention, it is possible to obtain a better copolymer by adjusting the type and the amount of the comonomer (col. 4; lines: 29-34). It would have been obvious to those skilled in the art at the time of the invention to incorporate the steps of dissolving the block copolymer in a solvent and filter and forming a mixture on a glass slide and then removing the solvent as taught by Maekawa et al. to the photovoltaic block copolymer device of Thompson in order to improve the physical properties of the polymer utilizing the characteristics of the monomer to obtain a better copolymer by adjusting the type and amount of comonomer.

With respect to claim 10, Thompson discloses:

- (a) individually synthesizing conjugated donor chains, conjugated acceptor chains (col. 4; lines: 7-9),
- (b) non-conjugated bridge chains (col. 5; lines: 65-67);
- (c) combining the non-conjugated bridge chains with the conjugated donor chains to form a plurality of bridge-donor-bridge units (col. 5; lines: 46-50 & 65-67); and
- (d) combining the bridge-donor-bridge units with the conjugated acceptor chains (coll. 4; lines: 7-9).

In regard to claim 11, Thompson further discloses the photovoltaic block copolymer samples synthesized by:

- (a) individually synthesizing conjugated donor chains (col. 4; lines: 7-9 & col. 5; lines: 65-67),
- (b) conjugated acceptor chains and non-conjugated bridge chains (col. 5; lines: 65-67); combining the non-conjugated bridge chains with the conjugated acceptor chains to form a plurality of bridge-acceptor-bridge units (col. 6; lines: 6-7 & as shown in col. 11; lines: 22-63);
- (c) combining the bridge-acceptor-bridge units with the conjugated donor chains (as shown in col. 11; lines: 22-63).

With respect to claim 12, Thompson further discloses the solvent air dried (col. 35; lines: 4-5).

In regard to claim 13, Thompson further discloses that the copolymer-solvent solution is filtered using a filter having a pore size of about 0.2 microns/260nm cutoff filter (col. 31; lines: 29-30).

3. Claim 14 is rejected under 35 U.S.C. 103(a) as unpatentable over Thompson (US 6,107,561) and Maekawa et al. US (5,565,607) as applied to claim 9 above, and in further view of Biricik et al. (US 4,939,043).

With respect to claim 14, modified Thompson discloses the method of claim 9 above, but fails to disclose that the film is formed by a method selected from the group consisting of spin coating and drop drying.

Biricik et al. discloses an optically transparent electrically conductive semiconductor film with photovoltaic applications (col. 1; lines: 63-67) deposited on glass slides. Birick et al. further teaches that the film is formed by a conventional technique such as spin coating which is well known in the art and is done prior to the placement of the substrate in the furnace (col. 9; lines: 58-62). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate spin coating as taught by Biricik et al. to the modified method of forming an organic photovoltaic of Thompson in order to incorporate a well known conventional technique that can performed prior to the placement of the substrate in the furnace.

4. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as unpatentable over Thompson (US 6,107,561) and Maekawa et al. US (5,565,607) as applied to claim 9 above, and in further view of Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)).

With respect to claims 15 and 16, modified Thompson discloses the method of claim 9 above, but fails to disclose the prepared surface is pre-cleaned, conducting glass and the solvent is removed by a method selected from the group consisting of heating, vacuum exposure and a combination of heating and vacuum exposure.

Brabec et al. discloses a photovoltaic device (introduction) and further discloses the a cleaned glass substrate in an ultrasonic bath of acetone (experimental, first paragraph, page 379). Brabec teaches that the solvent is removed by heat and then by vacuum exposure to give a pure product (col. 2, second paragraph, page 379). It would have been obvious to one of ordinary skill in the art at the time of the invention to

incorporated a pre-cleaned conductive glass for a photovoltaic device as taught by Brabec to the modified method of forming an organic photovoltaic of Thompson in order to clean with a solvent and then remove by heat and then by vacuum exposure to give a pure product.

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US 6,107,561) and Maekawa et al. US (5,565,607) as applied to claim 9 above, in view of Allen et al. (5,041,510) and Visscher et al., ("Construction of Multiple-Beam Optical Traps with Nanometer-Resolution Position Sensing", IEEE Journal of Selected Topics in Quantum Electronics, vol. 2, Issue 4, pages 1066-1076 (Dec.1996)).

With respect to claim 17, Thompson et al. discloses the methods with respect to claim 9 above, but fails to disclose applying to the device a force selected from the group consisting of magnetic, electrical, and optical forces. Allen et al. discloses the processing of copolymer block film (col.6; lines15-24); and discloses applying a force to polymer selected from the group consisting of magnetic and electrical (col.3; lines 66-68 & col.4; lines 1-2) forces to induce alignment of mobile dipolar copolymers (col. 3; lines 66-68). Thus, it would have been obvious to one skilled in the art at the time of the invention to apply magnetic and electrical forces as taught by Allen to modify Thompson et al. in order to mobilize the dipolar (charge carriers within) copolymers.

Thompson et al. in view of Allen et al. fails to disclose applying an optical force to the block copolymer. However, Visscher et al. discloses the ability to manipulate molecules with forces on a molecular scale (p. 1075) and applying the use of an optical force, (also known as "optical tweezers") to generate charge carrier displacement (to

move positive and negative charges) along the polymeric tracks (p. 1066). Thus, it would have been further obvious to one skilled in the art at the time of the invention to apply an optical force as taught by Visscher et al. in modified Fan et al. in order to move the charges more effectively along the conjugated chains and towards the electric field directions.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)) in view of Sethuraman et al. (5,972,124).

In regard to claim 18, Brabec et al. discloses:

- (a) the cleaning of entire piece of conducting glass (experimental paragraph 1; p. 379);
- (b) synthesizing a photovoltaic block copolymer (i.e. block copolymers is made up of different polymerized monomers: definition given by [http://en.wikipedia.org/wiki/Block\\_copolymer](http://en.wikipedia.org/wiki/Block_copolymer) accessed on 1/2/2008) from conjugated donor chains, conjugated acceptor chains and non-conjugated bridge chains (experimental paragraph 1; p. 379);
- (c) spin coating the piece of conducting glass (experimental paragraph 1; p. 379) with the photovoltaic block copolymer to form a film having a thickness of about 100nm (paragraph 2.3.1; p. 376);
- (d) vacuum depositing an electrode material on top of the film wherein the electrode material has a thickness of about 100nm (paragraph 2.3.2; p. 377),



such that a positive electrode and a negative electrode are formed (paragraph 2.3.2; p. 377).

Brabec et al. fails to disclose a method of immersing a portion of conducting glass specifically in sulfuric acid. Whereas, Sethuraman et al. teaches a method of cleaning conducting glass (col. 4; lines: 25) and immersing a portion of a piece of conducting glass in a concentrated sulfuric acid cleaning solution (col.4; lines: 11-12 and lines: 25-29) to successfully clean the conducting glass without removing metals (col.4; lines: 34-35). Thus, it would have been obvious to one skilled in the art at the time of the invention to apply the cleaning steps as taught by Sethuraman et al. to the method of Brabec et al. in order to successfully clean the conducting glass without removing metals.

7. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)) in view of Sethuraman et al. (5,972,124) as in claim 18 above, and in further view of Nava et al., ("Fullerene-functionalized polyesters: synthesis, characterization and incorporation in photovoltaic cells", New Journal of Chemistry, vol. 26, pages 1584-1589 (October 2002)).

With respect to claims 19 and 20, modified process of Brabec et al. discloses the elements of claim 18 as discussed above, but fails to disclose forming one or more films of carrier materials.

Nava et al. discloses processing of copolymer films (paragraph 2; p. 1587) and discloses forming one or more carrier films of lithium fluoride (paragraph 2; p. 1587) and poly(ethylene dioxythiophene)/polystyrene sulfuric acid (PEDOT:PSS) (paragraph 1; p. 1587) that shows clear photovoltaic behavior(paragraph 2; p. 1587). Thus, it would have been obvious to one skilled in the art at the time of the invention to include the carrier films of lithium fluoride and poly(ethylene dioxythiophene)/polystyrene sulfuric acid (PEDOT:PSS) as taught by Nava et al. to the method of Brabec et al. in order to form one or more films that shows clear photovoltaic behavior.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)) in view of Sethuraman et al. (5,972,124) as in claim 18 above, and in further view of Hummelen et al. (Stability issues of conjugated polymer/fullerene solar cells from achemical viewpoint", Proceedings of SPIE vol. 4108, (2001), p.76-83)

With respect to claim 21, modified steps of Brabec et al. discloses:

- (a) the forming of a film synthesized from donor chains between the positive electrode and the photovoltaic block copolymer film (col. 4; lines: 4-8 & 23-29).;
- (b) and forming a film synthesized from acceptor chains (electrons) between the negative electrode the photovoltaic block copolymer film ((col. 4; lines: 4-8 & 23-29).

However, modified Brabec et al. fails to disclose a photovoltaic block film with donor and acceptor chains between the positive and negative electrodes. Hummelen et al. discloses a photovoltaic block film (p.77, Figure 1b.) with synthesized donor and acceptor chains in Figure 1.b (p.77) to have the holes flow towards the positive electrode and electrons flow towards the negative electrode. Thus, it would have been obvious to one skilled in the art at the time of the invention to apply the modified steps of Brabec et al. to synthesize a photovoltaic block copolymer with donor and acceptor chains to supply a charge transfer in the photovoltaic block copolymer.

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)) in view of Kawakami et al. (US 5,296,043).

In regard to claim 22, Brabec et al. discloses a method for forming an organic photovoltaic device, comprising:

- (a) providing a substrate having a conducting layer (second paragraph, p.375);
- (b) the cleaning the conducting glass with a cleaning solution/acetone (experimental paragraph 1; p. 379);
- (c) synthesizing a photovoltaic block copolymer from conjugated donor chains, conjugated acceptor chains and non-conjugated bridge chains (experimental paragraph 1; p. 379);
- (d) spin coating the piece of conducting glass (experimental paragraph 1; p. 379) with the photovoltaic block copolymer to form a film (paragraph 2.3.1; p. 376);

(e) vacuum depositing an electrode material on top of the film wherein the electrode material has a thickness of about 100nm (paragraph 2.3.2; p. 377), such that a positive electrode and a negative electrode are formed (paragraph 2.3.2; p. 377 & experimental, page 379).

However, Brabec et al. fails to disclose the removing the conducting layer from a portion of the substrate.

Kawakami et al. discloses an integrated photovoltaic (abstract) and further discloses the removal of a portion of the electrode/conductive layer from the substrate wherein the removal of the electrode layer functions as a barrier, preventing electrical connection between the semiconducting layer and the portion where the metal electrode layer (col. 8; lines: 16-28). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a removed portion of the electrode as taught by Kawakami et al. to the method of forming an organic photovoltaic device of Brabec in order to functions as a barrier, preventing electrical connection between the semiconducting layer and the portion where the metal electrode layer.

10. Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", *Advanced Functional Materials*, vol. 11, Issue 5, pages 374-380 (2001)) in view of Kawakami et al. (5,296,043) applied to claim 22 above, and in further view of Nava et al., ("Fullerene-functionalized polyesters: synthesis, characterization and incorporation in photovoltaic cells", *New Journal of Chemistry*, vol. 26, pages 1584-1589 (October 2002)).

With respect to claim 23, modified method of Brabec et al. discloses the elements of claim 22 as discussed above, but fails to disclose forming one or more films of carrier materials between the photovoltaic block copolymer and the electrodes.

Nava et al. discloses processing of copolymer films (paragraph 2; p. 1587) and discloses forming one or more carrier films of lithium fluoride (paragraph 2; p. 1587) and poly(ethylene dioxythiophene)/polystyrene sulfuric acid (PEDOT:PSS) (paragraph 1; p. 1587) that shows clear photovoltaic behavior(paragraph 2; p. 1587). Thus, it would have been obvious to one skilled in the art at the time of the invention to include the carrier films of lithium fluoride and poly(ethylene dioxythiophene)/polystyrene sulfuric acid (PEDOT:PSS) as taught by Nava et al. to the method of modified Brabec et al. in order to form one or more films that shows clear photovoltaic behavior:

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)) and Kawakami et al. (5,296,043) applied to claim 22 above, and in further view of Hummelen et al. (Stability issues of conjugated polymer/fullerene solar cells from achemical viewpoint", Proceedings of SPIE vol. 4108, (2001), p.76-83)

With respect to claim 24, modified steps of Brabec et al. discloses:

- (a) the forming of a film synthesized from donor chains between the positive electrode and the photovoltaic block copolymer film (col. 4; lines: 4-8 & 23-29).;

(b) and forming a film synthesized from acceptor chains (electrons) between the negative electrode the photovoltaic block copolymer film ((col. 4; lines: 4-8 & 23-29).

However, modified Brabec et al. fails to disclose a photovoltaic block film with donor and acceptor chains between the positive and negative electrodes.

Hummelen et al. discloses a photovoltaic block film (p.77, Figure 1b.) with synthesized donor and acceptor chains in Figure 1.b (p.77) to have the holes flow towards the positive electrode and electrons flow towards the negative electrode. Thus, it would have been obvious to one skilled in the art at the time of the invention to apply the modified steps of Brabec et al. to synthesize a photovoltaic block copolymer with donor and acceptor chains to supply a charge transfer in the photovoltaic block copolymer.

12. Claim 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US 6,107,561) and Maekawa et al. US (5,565,607) as applied to claim 9 above, and in further view of Verhoeven et al. (US 6,432,560)

With respect to claims 25 and 26, modified Thompson discloses the method of claim 9, but fails to disclose wherein the photovoltaic block copolymer samples are synthesized by: individually synthesizing conjugated donor chains, conjugated acceptor chains and non- conjugated bridge chains; combining the non-conjugated bridge chains with the conjugated donor chains to form at least one first unit from the group of bridge-donor-bridge or bridge-donor units; and forming at least one second unit by combining

at least one conjugated acceptor chain with the at least one first unit at a non-conjugated bridge chain.

Verhoeven et al. discloses the method of forming an organic electroluminescent device (col. 1; lines: 1-7) and further discloses individually synthesizing conjugated donor chains conjugated acceptor chains and non-conjugated bridge chains (col. 1; lines: 24-25 & 47-65); combining the non-conjugated bridge chains with the conjugated donor chains to form at least one first unit from the group of bridge-donor-bridge or bridge-donor units (col. 2; lines: 26-65); and forming at least one second unit by combining at least one conjugated acceptor chain with the at least one first unit at a non-conjugated bridge chain (also vice versa such as combining the non-conjugated bridge chains with the conjugated acceptor chains to form at least one first unit from the group of bridge-acceptor-bridge or bridge-donor units; and forming at least one second unit by combining at least one conjugated donor chain with the at least one first unit at a non-conjugated bridge chain) (col. 1; lines: 51-60 & col. 2; lines: 26-65). Verhoeven et al. also teaches that the charge transfer (CT) molecules can be used in the electroluminescent device (col. 4; lines: 40-52) and also the band gap, the electron affinity, and the ionization potential can be adjusted by choosing the proper conjugated polymer chains and proper side chains (col. 1; lines: 25-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to synthesize conjugate donor and acceptor chains as taught by Verhoeven et al. to the modified method of forming an organic photovoltaic of Thompson in order to adjust the band gap, the

electron affinity, and the ionization potential by choosing the proper conjugated polymer chains and proper side chains.

### **Response to Arguments**

#### Priority

13. The petition under 37 CFR 1.78(a), filed June 19, 2007 to accept an unintentionally delayed claim under 35 U.S.C. 119(e) for the benefit of prior-filed Provisional Application No. 60/426,108 has been granted on October 17, 2007.

#### Claim Rejection under 35 U.S.C. 112

14. Due to the amendments of claims 12 and 19, the rejection under 35 U.S.C. 112 second paragraph is withdrawn.

#### Claim Rejection under 35 U.S.C. 102(a)

15. Applicant's arguments to accept the benefit of prior filed Provisional Application No. 60/426,108 which was filed on November 14, 2002, with respect to claim(s) 9-16 under 35 U.S.C. 102(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Thompson (US 6,107,561), Maekawa et al. US (5,565,607), Biricik et al. (US 4,939,043), and Brabec et al., ("Origin of the Open Circuit Voltage of Plastic Solar Cells", Advanced Functional Materials, vol. 11, Issue 5, pages 374-380 (2001)).

#### Claim Rejections under 35 U.S.C. 103(a)



15. With respect to claim 18, the Applicant's argues that Brabec fails to disclose the limitation so a block copolymer. The Examiner respectfully disagrees. Brabec discloses synthesizing a copolymer wherein block copolymers is made up of different polymerized monomers (introduction, page 374 & Results and Discussion, paragraph 1, page 375). The definition of block copolymer is well known to those skilled in the art and as evidenced by [http://en.wikipedia.org/wiki/Block\\_copolymer](http://en.wikipedia.org/wiki/Block_copolymer) accessed on 1/2/2008.

Furthermore, the Examiner respectfully agrees that the references of Sethuramen does not disclose a block copolymer, but however does teach the deficiency of Brabec such as a method of cleaning conducting glass (col. 4; lines: 25) and immersing a portion of a piece of conducting glass in a concentrated sulfuric acid cleaning solution (col.4; lines; 11-12 and lines: 25-29) to successfully clean the conducting glass without removing metals (col.4; lines: 34-35). Also, Nava does not specifically disclose a block copolymer but does remedy the deficiency of Brabec and teaches the processing of copolymer films (paragraph 2; p. 1587) and discloses forming one or more carrier films of lithium fluoride (paragraph 2; p. 1587) and poly(ethylene dioxythiophene)/polystyrene sulfuric acid (PEDOT:PSS) (paragraph 1; p. 1587). Whereas, Hummelen et al. discloses a photovoltaic block film (p.77, Figure 1b.) where not intentionally used to disclose the use of photovoltaic block copolymers they were used

**Conclusion**

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asha Hall whose telephone number is 571-272-9812.

The examiner can normally be reached on Monday-Friday 7:30-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJH  


  
ALEXA D. NECKEL  
SUPERVISORY PATENT EXAMINER